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REMARKS

Claims 1, 10 and 21 are amended. Claims 1-16 and Claims 21-24, as amended, remain in the application. No new matter is added by the amendments to the specification and the claims.

The Rejections:

In the Office Action dated January 24, 2007, the Examiner rejected Claims 1, 10, and 21 under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The Examiner stated that the term "closely" in Claims 1, 10, and 21 is a relative term which renders the claim indefinite. The term "closely" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. The office will interpret the term "closely" in its broadest reasonable interpretation.

The Examiner rejected Claims 10-13 and 21-24 under 35 U.S.C. 102(e) as being anticipated by Nakagaki et al. U.S. Patent No. 6598707.

Regarding Claim 10, the Examiner stated that Nakagaki discloses an elevator installation having a car, referred to as cage 20, and a counterweight 30 connected by a drive means, referred to as front and back hoist cables 50, 60, and movable in an elevator shaft comprising an elevator shaft 7, an elevator car 30 movable in the elevator shaft 7 along a pair of car guides 22, 23 mounted in the elevator shaft 7, a counterweight 30 movable in the elevator shaft 7 along a pair of counterweight guides 31, 32 mounted in the elevator shaft 7, a crossbeam, referred to as connecting beam 33, attached to the counterweight guides 31, 32 and one of the car guides 22, and a gearless drive motor, referred to as hoist 41, mounted on the crossbeam 33 for engaging the drive means 50, 60 and moving the car 20 and the counterweight 30 in the elevator shaft 7, the drive motor 41 being connected by a drive shaft 42, 43 to a pair of drive pulleys 44, 45 engaging the drive means 50, 60, the drive pulleys being spaced apart adjacent one another and positioned closely adjacent opposite sides of one of the car guides 22.

Regarding Claim 11, the Examiner stated that Nakagaki discloses two drive means 50, 60 connecting the car 20 and the counterweight 30, each drive means 50, 60 having two ends,

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referred to as anchoring ends 53, 57, 63, 67, and each of the ends 53, 57, 63, 67 being fixed to one of the car guides 23, via cage-side hitching beam 25, and the crossbeam 33.

Regarding Claim 12, the Examiner stated that Nakagaki discloses two drive means 50, 60 connecting the car 20 and the counterweight 30 and wherein the drive means 50, 60 are belts.

Regarding Claim 13, the Examiner stated that Nakagaki discloses the car 20 is suspended in the elevator shaft 7 with a 2:1 ratio and the drive motor 41 is arranged in a region above a travel path of the counterweight 30 in the elevator shaft 7, shown in Figures 1, 2, 4, and 5.

Regarding Claim 21, the Examiner stated that Nakagaki discloses an elevator installation having a car 20 and a counterweight 30 connected by a drive means 50, 60 and movable in an elevator shaft 7 comprising a pair of car guides 22, 23 adapted to be mounted in the elevator shaft 7, a pair of counterweight guides 31, 32 adapted to be mounted in the elevator shaft 7, a crossbeam 33 attached to the counterweight guides 31, 32 and one of the car guides 22, a drive motor 41 mounted on the crossbeam 33 and connected to a drive shaft 42, 43, a pair of drive pulleys 44, 45 adapted for engaging the drive means 50, 60 to move the car 20 and the counterweight 30 in the elevator shaft 7 wherein the drive pulleys 44, 45 are connected to the drive shaft 42, 43 and are positioned spaced apart adjacent to one another on opposite sides of an imaginary line connector extending between the car guides 22, 23 and closely adjacent opposite sides of one of the car guides 22.

Regarding Claim 22, the Examiner stated that Nakagaki discloses the counterweight guides 31, 32 and the car guides 22, 23 are positioned at apices of a substantially horizontal triangle and end regions of the crossbeam 33 are fastened to respective ones of the counterweight guides 31, 32.

Regarding Claim 23, the Examiner stated that Nakagaki discloses a center region of the crossbeam 33 is attached to one of the car guides 22.

Regarding Claim 24, the Examiner stated that Nakagaki discloses the drive motor 41 is in an area of the triangle substantially above the counterweight 30.

The Examiner rejected Claims 1-3, 8, and 9 under 35 U.S.C. 103(a) as being unpatentable over Nakagaki in view of Cox U.S. Patent No. 3559768.

Regarding Claim 1, the Examiner stated that Nakagaki discloses an elevator installation having a car, referred to as cage 20, and a counterweight 30 connected by a drive means, referred

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to as front and back hoist cables 50, 60, and movable in a shaft 7 comprising a pair of car guides 22, 23 adapted to be mounted in the shaft 7, a pair of counterweight guides 31, 32 adapted to be mounted in the shaft, a crossbeam, referred to as connecting beam 33, attached to the counterweight guides 31, 32 and to car guide 22, and a drive motor, referred to as hoist 41, mounted on the crossbeam 33 and coupled to a pair of drive pulleys, referred to as front and back traction sheaves 44, 45, adapted for engaging the drive means 50, 60 to move the car 20 and the counterweight 30 in the elevator shaft 7 wherein the drive pulleys 44, 45 are operatively connected by a drive shaft with the drive motor and a brake, the drive pulleys 44, 45 being spaced apart and positioned closely adjacent opposite sides of the car guides 22, 23, shown in Figures 1, 3, and 4. The Examiner commented that Nakagaki is silent concerning the drive pulleys are arranged between the drive motor and the brake on the drive shaft. According to the Examiner, Cox teaches drive pulleys, referred to as traction sheaves 11, 25, arranged between a drive motor, referred to as electric motor 14, and a brake, referred to as brake drum 15, on a drive shaft 12, 24, and it would have been obvious to one of ordinary skill in the art at the time of the invention to arrange the pulleys disclosed by Nakagaki between a drive motor and a brake as taught by Cox to equally distribute the load on the shaft between the drive motor, drive pulleys, and the brake.

Regarding Claim 2, the Examiner stated that Nakagaki discloses the drive pulleys 44, 45 are arranged on opposite sides of an imaginary line horizontal connector of the car guides 22, 23.

Regarding Claim 3, the Examiner stated that Nakagaki discloses the drive means are belts, referred to as front and back hoist cable 50, 60. The Examiner commented that Nakagaki is silent concerning the drive pulleys are smaller in diameter than the drive motor and/or brake. According to the Examiner, Cox teaches drive pulleys 11, 25 are smaller in diameter than the drive motor 14 and brake 15, and it would have been obvious to one of ordinary skill in the art at the time of the invention to make the diameter of the drive pulleys disclosed by Nakagaki smaller than the drive motor and brake as taught by Cox because a smaller diameter sheave results in a reduced torque and an increased rotation speed of the drive motor, which increases the efficiency of the drive motor.

Regarding Claim 8, the Examiner stated that Nakagaki further discloses the counterweight guides 31, 32 and the car guide 22 are positioned at apices of a substantially

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horizontal triangle and the crossbeam 33 is fastened at end regions to the counterweight guides 31, 32 and at a center region to the car guide 22.

Regarding Claim 9, the Examiner stated that Nakagaki further discloses the car guides 22, 23 and counterweight guides 31, 32 are arranged to extend substantially vertically in the elevator shaft and the crossbeam 33 is arranged to extend substantially horizontally in the elevator shaft.

The Examiner rejected Claims 5-7 under 35 U.S.C. 103(a) as being unpatentable over Nakagaki in view of Cox, and further in view of Yasuda et al. U.S. Patent No. 6488124.

Regarding Claim 5, the Examiner stated that Nakagaki is silent concerning the drive motor and the brake are mounted on a bracket fastened to the crossbeam. According to the Examiner, Yasuda teaches a drive motor 126 and a brake 118 are mounted on a bracket, referred to as support legs 120, fastened to the crossbeam 108, and it would have been obvious to one of ordinary skill in the art at the time of the invention to mount the drive motor and the brake disclosed by Nakagaki on a bracket fastened to the crossbeam as taught by Yasuda to facilitate the connection between the drive motor and the brake, and the crossbeam.

Regarding Claim 6, the Examiner stated that Nakagaki is silent concerning a bracket mounted at a center region of the crossbeam. According to the Examiner, Yasuda teaches the bracket 120 is mounted at a center region of the crossbeam 108, and it would have been obvious to one of ordinary skill in the art at the time of the invention to mount the bracket as taught by Yasuda at a center region of the crossbeam disclosed by Nakagaki to facilitate the connection between the drive motor and the brake, and the crossbeam.

Regarding Claim 7, the Examiner stated that Nakagaki is silent concerning the drive pulleys arranged substantially in a region within an enclosure of the bracket. According to the Examiner, Cox teaches drive pulleys 11, 25 arranged substantially in a region within an enclosure of the brackets, not numbered but shown attached to of the elevator shaft shown in Figure 1, and it would have been obvious to one of ordinary skill in the art at the time of the invention to arrange the drive pulleys disclosed by Nakagaki substantially in a region within an enclosure of the bracket as taught by Cox to make the drive pulleys readily accessible with the bracket.

The Examiner rejected Claims 14 and 15 under 35 U.S.C. 103(a) as being unpatentable over Nakagaki in view of Yasuda. Applicants note that Claim 16 is not listed, but is commented upon in the Examiner's remarks.

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Regarding Claim 14, the Examiner stated that Nakagaki discloses a car 20 suspended in an elevator shaft 7 with a 2:1 ratio and a drive motor 41. The Examiner commented that Nakagaki is silent concerning a drive motor arranged in a region above a travel path of the car. According to the Examiner, Yasuda teaches a car 101 suspended in an elevator shaft 103 with a drive motor 126 arranged in a region above a travel path of the car 101, shown in Figures 4-6 20, 21A, 21B, and 31-33, and it would have been obvious to one of ordinary skill in the art at the time of the invention to arrange the drive motor disclosed by Nakagaki in a region above a travel path of a car as taught by Yasuda to overcome elevator shaft size and shape constraints.

Regarding Claim 15, the Examiner stated that Nakagaki discloses a car 20 suspended in an elevator shaft 7 with a 2:1 ratio and a drive motor 41. The Examiner commented that Nakagaki is silent concerning a drive motor arranged in a region above a travel path of the car and a travel path of the counterweight. According to the Examiner, Yasuda teaches a car 101 suspended in an elevator shaft 103 with a drive motor 126 arranged in a region above a travel path of the car 101 and a travel path of the counterweight 102, shown in Figures 4-6 20, 21A, 21B, and 31-33, and it would have been obvious to one of ordinary skill in the art at the time of the invention to arrange the drive motor disclosed by Nakagaki in a region above a travel path of a car and a travel path of a counterweight as taught by Yasuda to overcome elevator shaft size and shape constraints.

Regarding Claim 16, the Examiner stated that Nakagaki is silent concerning the car suspended in the elevator shaft with a 1:1 ratio and the drive motor arranged in a region above a travel path of the car. According to the Examiner, Yasuda teaches a car 101 is suspended in an elevator shaft 103 with a 1:1 ratio and the drive motor 126 is arranged in a region above a travel path of the car 101, shown in Figures 4-6 20, 21A, 21 B, and 31-33, and it would have been obvious to one of ordinary skill in the art at the time of the invention to suspend the car disclosed by Nakagaki in an elevator shaft with a 1:1 ratio as taught by Yasuda and arrange the drive motor disclosed by Nakagaki in a region above a travel path of the car as taught by Yasuda to overcome elevator shaft size and shape constraints.

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Applicants' Response:

In response to the rejection of Claims 1, 10, and 21 under 35 U.S.C. 112, second paragraph, Applicants deleted the term "closely" from Claims 1, 10, and 21.

Applicants amended the specification on Page 8 and Claims 1, 10 and 21 to recite that the spacing between the drive pulleys 3, 3' is smaller than an axial length of the associated drive motor 1, 1'. Support for these amendments is shown in Figs. 2, 3, 5, 7 and 9 of the drawings as filed.

The examiner rejected Claims 10-13 and 21-24 as being rejected under 35 U.S.C. 102(e) as being anticipated by Nakagaki et al. Applicants' amended Claims 10 and 21 recite that the spacing between the drive pulleys 3, 3' is smaller than an axial length of the associated drive motor 1, 1'. Clearly, the spacing between the Nakagaki traction sheaves 44, 45 is greater than the axial length of the hoist motor 41. Therefore, Nakagaki does not anticipate Claims 10-13 and 21-24.

The Examiner rejected Claims 1-3, 5-16 and 21-24 as being unpatentable over Nakagaki in view of Cox and/or Yasuda. The Examiner agrees (see Page 10, paragraph 50) that Nakagaki is silent regarding drive pulleys which are arranged "closely" to guide rails. The Examiner stated that the traction sheaves 44, 45 are spaced a wide distance apart and are not closely adjacent opposite sides of the guide rail 22. This is not only a preferred embodiment, it is the only solution shown by Nakagaki. All the figures of Nakagaki show widely spaced drive pulleys to allow an arrangement of the integrated drive motor and brake between the drive pulleys and to get a stable suspension of the car. Nakagaki emphasizes (Col. 3, Lines 30-35) that it is preferred to dispose four car sheaves 26, 27, 28, 29 at the four corners of the floor of the car 20 to get a stable suspension of the car. Thus, the entire teaching of Nakagaki is that the car sheaves, the drive means and consequently the drive-pulleys are widely spaced to the extremities of the drive and the four corners of the car. Thus, Nakagaki teaches away from the solution of the claimed invention.

Applicants' defined arrangement of the drive pulleys is not only a simple rearrangement of the parts shown in Nakagaki; it contains a clear new teaching. Using the claimed invention, the introduction of supporting force to a drive support is concentrated to a middle zone and it is

easily possible to transfer the supporting force to one of the car guides which acts as a supporting column. The size of the drive may therefore be reduced.

Cox shows an arrangement of two elevators which are normally operable independent of each other and with means for connecting together the drive pulleys of the two elevators in the event of power failure. Cox discloses a single drive pulley arranged between a motor and a brake.

Cox is absolutely silent regarding a split of the single drive pulley into two spaced drive pulleys and there are absolutely no indications that drive pulleys are spaced apart and positioned adjacent opposite sides of at least one of car guides. Cox is further silent regarding a pair of drive pulleys wherein a spacing of between the drive pulleys is smaller than an axial length of a drive motor.

Also, taking Nakagaki and Cox together there is again no solution that the drive pulleys be spaced apart and positioned adjacent opposite sides of the at least one of the car guides and that the spacing of the drive pulleys is smaller than an axial length of the drive motor.

There is also no combined teaching which would lead to said solution, because Cox teaches a combination of two elevators in case of power failure and Nakagaki (as well as Yasuda) teaches an arrangement of drive pulleys spaced apart a wide distance, near the corners of the car to get a stable suspension of the car.

Clearly there is no teaching or suggestion of a combination of Nakagaki, Cox and/or Yasuda that would lead one of ordinary skill in the art to a solution wherein:

drive pulleys are arranged between a drive motor and a brake on a shaft (Claim 1); and
the drive pulleys being spaced apart and positioned adjacent opposite sides of at least one of a pair of car guides, and the spacing between the drive pulleys is smaller than an axial length of the drive motor.

In view of the amendments to the claims and the above arguments, Applicants believe that the claims of record now define patentable subject matter over the art of record. Accordingly, an early Notice of Allowance is respectfully requested.